

INTERNATIONAL SEARCH REPORT

Inte Application No
PCT/US2004/023491

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B01D53/28 B01D53/62 B01D53/50 B01D53/56 C01B6/34
C01B3/56 C01C1/02 C01B33/04 C01B25/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B01D C01B C01C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 391 090 B1 (ALVAREZ JR DANIEL ET AL) 21 May 2002 (2002-05-21) column 2, line 52 - column 3, line 48 column 5, line 10 - column 6, line 6 column 7, line 13 - line 37; claims 1-14	1-21
X	WO 03/037485 A (MATHESON TRI GAS INC) 8 May 2003 (2003-05-08) claims 1-66	1-21
X	US 6 059 859 A (ALVAREZ JR DANIEL ET AL) 9 May 2000 (2000-05-09) column 5, line 66 - column 6, line 10; claims 1-21	1-17, 20
A	US 4 976 944 A (PACAUD BERNARD ET AL) 11 December 1990 (1990-12-11) claims	1-21

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
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Date of the actual completion of the international search

12 November 2004

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22/11/2004

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Information on patent family members

Inten

Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6391090	B1	21-05-2002	US 2002139247 A1	03-10-2002
			US 2004168571 A1	02-09-2004
WO 03037485	A	08-05-2003	US 2003097929 A1	29-05-2003
			WO 03037485 A1	08-05-2003
US 6059859	A	09-05-2000	JP 2000093734 A	04-04-2000
US 4976944	A	11-12-1990	FR 2622564 A1	05-05-1989
			EP 0314542 A1	03-05-1989
			JP 1201019 A	14-08-1989
			JP 5000336 B	05-01-1993